

appendix **D**

Narrative, Numerical and Method-based Chlorophyll *a* Criteria Adopted as Water Quality Standards by States Across the U.S.

State	Water Body Type or Designated Use	Numeric or Narrative Chlorophyll <i>a</i> Criteria	
Alabama	Narrative criteria for specific lakes and reservoirs - Walter F. George - West Point - Weiss	Numeric chlorophyll <i>a</i> criteria -16 µg liter ⁻¹ -27 µg liter ⁻¹ -20 µg liter ⁻¹	Chlorophyll <i>a</i> levels set for samples collected between April-October. Samples collected monthly at deepest points.
Alaska	(1) <u>Fresh water</u> (A) water supply (i) drinking, culinary and food processing; (ii) agriculture, including irrigation and stock watering; (iii) aquaculture; (iv) industrial; (B) water recreation (i) contact recreation; (ii) secondary recreation; (C) growth and propagation of fish, shellfish, other aquatic life and wildlife; and (2) <u>Marine water</u> (A) water supply (i) aquaculture; (ii) seafood processing; (iii) industrial; (B) water recreation (i) contact recreation; (ii) secondary recreation; (C) growth and propagation of fish, shellfish, other aquatic life and wildlife; and (D) harvesting for consumption of raw mollusks or other raw aquatic life.	Narrative criteria Aesthetic Qualities CRITERIA All waters free from substances attributable to wastewater or other discharges that: (5) Produce undesirable or nuisance aquatic life.	
Arizona	Designated uses of a surface water may include full body contact, partial body contact, domestic water source, fish consumption, aquatic and wildlife (warm-water fishery), aquatic and wildlife (ephemeral), aquatic and wildlife (effluent dependent water) agricultural irrigation, and agricultural livestock watering. The designated uses for specific waters are listed in Appendix B of the article.	R 18-11-108 Narrative Water Quality Standards A. A surface water shall be free from pollutants in amounts or combinations that: 6) cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth or propagation of other aquatic life or that impair recreational uses.	

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California Water Quality Control Board Region 5	Central Valley Sacramento and San Joaquin River Basins	Wineries with stills produce substantial quantities of stillage waste which is high in concentrations of BOD and nitrogen. The stillage is normally discharged directly to land without any prior treatment. There is a potential for the waste to affect water quality and to create nuisance conditions. A study has been conducted to develop recommendations for minimizing water quality effects and nuisance conditions resulting from land application of stillage waste. There is a need to implement guidelines for land disposal of stillage waste that can be used by the industry as a general indication of minimum disposal practices when accompanied with suitable soil, weather, groundwater and other conditions affecting the discharge.	
California Water Quality Control Board	San Francisco Bay/ Sacramento-San Joaquin Delta Estuary	Water Quality Compliance and Baseline Monitoring Monthly monitoring for chlorophyll <i>a</i> at several stations. Water Quality Objective: To prevent nuisance.	
California Water Quality Control Board Region 2	San Francisco Bay region	One criterion to protect the aesthetic value of water used for recreation from excessive algal growth is based on chlorophyll <i>a</i> . Biostimulatory substances can cause high chlorophyll <i>a</i> level rise.	
Colorado	Numeric water quality criteria by designated use and for indicated rivers and streams.	Bear Creek Reservoir ... Traditionally, the average concentration of chlorophyll <i>a</i> has been selected by the commission as the indicator of lake condition. For Bear Creek Reservoir, however, peak algal biomass (chlorophyll <i>a</i>) was selected as the most important of these indicators upon which to assess trophic response because algal blooms are most often associated with impaired uses. To achieve the goal of change in trophic status, a 16 percent reduction in the frequency of nuisance algal blooms during the growing season would need to be achieved, as well as a reduction in frequency and magnitude of the peak chlorophyll <i>a</i> concentrations.	
Connecticut	Inland Surface waters -Class AA Existing or proposed drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other purposes (recreational uses may be restricted). -Class A Potential drinking water supply; fish and wildlife habitat; recreational use; agricultural, industrial supply and other legitimate uses, including navigation. -Class B Recreational use; fish and wildlife habitat; agricultural and industrial supply and other legitimate uses, including navigation. -Class C and Class D (goal to be class A or B)	Lake: Oligotrophic May be class A, AA or class B water.	0-2 µg liter ⁻¹ mid-summer
		Lake: Mesotrophic May be Class AA, Class A, or Class B.	2-15 µg liter ⁻¹ mid-summer
		Lake: Eutrophic May be Class AA, Class A, or Class B water.	15-30 µg liter ⁻¹ mid-summer
		Lake: Highly Eutrophic May be Class AA, Class A, or Class B water.	30+ µg liter ⁻¹ mid-summer

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Georgia	Chlorophyll <i>a</i> criteria for only Lakes and Major Lake tributaries	<p>West Point Lake: shall not exceed 27 $\mu\text{g liter}^{-1}$ (April-October)</p> <p>Walter F. George Lake: shall not exceed 18 $\mu\text{g liter}^{-1}$ (April-October)</p> <p>Lake Jackson: shall not exceed 20 $\mu\text{g liter}^{-1}$ (April – October)</p> <p>Lake Alatoona</p> <p>Upstream from the Dam – 10 $\mu\text{g liter}^{-1}$</p> <p>Allatoona Creek upstream from I-75 10 $\mu\text{g liter}^{-1}$</p> <p>Mid-Lake downstream from Kellogg Creek – 10 $\mu\text{g liter}^{-1}$</p> <p>Little River upstream from Highway 205 – 15 $\mu\text{g liter}^{-1}$</p> <p>Etowah River upstream from Sweetwater Creek– 12 $\mu\text{g liter}^{-1}$</p> <p>Lake Sidney Lanier</p> <p>Upstream from the Flowery Branch confluence – 5 $\mu\text{g liter}^{-1}$</p> <p>At Browns Bridge Road (State Road 369) – 5 $\mu\text{g liter}^{-1}$</p> <p>At Bolling Bridge (State Road 53) on Chestatee River – 10 $\mu\text{g liter}^{-1}$</p> <p>At Lanier Bridge (State Road 53) on Chattahoochee River – 10 $\mu\text{g liter}^{-1}$</p>
Hawaii	<p>Criteria for all Estuaries except Pearl Harbor</p> <p>Criteria for Pearl Harbor Estuary</p> <p>Open coastal waters (note that criteria for open coastal waters differ, based on fresh water discharge.)</p> <p>Oceanic waters</p>	<p>Chlorophyll <i>a</i> ($\mu\text{g liter}^{-1}$) – geometric mean not to exceed the given value of 2.00 $\mu\text{g liter}^{-1}$. Not to exceed the given value more than 10 percent of the time 5.00 $\mu\text{g liter}^{-1}$. Not to exceed the given value more than 2 percent of the times of 10.00 $\mu\text{g liter}^{-1}$.</p> <p>Chlorophyll <i>a</i> ($\mu\text{g liter}^{-1}$) – geometric mean not to exceed the given value of 3.50 $\mu\text{g liter}^{-1}$. Not to exceed the given value more than 10 percent of the time – 10.00 $\mu\text{g liter}^{-1}$. Not to exceed the given value more than 2 percent of the time – 20.00 $\mu\text{g liter}^{-1}$.</p> <p>Chlorophyll <i>a</i> ($\mu\text{g liter}^{-1}$) – geometric mean not to exceed the given value of 0.30 $\mu\text{g liter}^{-1}$*, 0.15 $\mu\text{g liter}^{-1}$**</p> <p>Not to exceed the given value more than 10 percent of the time – 0.90 $\mu\text{g liter}^{-1}$*, 0.50 $\mu\text{g liter}^{-1}$**</p> <p>Not to exceed the given value more than 2 percent of the time – 1.75 $\mu\text{g liter}^{-1}$*, 1.00 $\mu\text{g liter}^{-1}$**</p> <p>*“Wet” criteria apply when the coastal waters receive more than three million gallons per day of fresh water discharge per shoreline mile.</p> <p>** “Dry” criteria apply when the open coastal waters receive less than three million gallons per day of fresh water discharge per shoreline mile.</p> <p>Chlorophyll <i>a</i></p> <p>0.06 $\mu\text{g liter}^{-1}$ – geometric mean not to exceed the given value</p> <p>0.12 $\mu\text{g liter}^{-1}$ – not to exceed the given value more than 10 percent of the time</p> <p>0.20 $\mu\text{g liter}^{-1}$ – not to exceed the given value more than 2 percent of the time</p>

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Idaho	All waters	Excess Nutrients. Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses.
Iowa	By designated uses General use segments. Designated use segments: Primary contact recreation (Class "A"). Cold water aquatic life (Class "B (CW)"). High quality water (Class "HQ"). High quality resource water (Class "HQR"). Significant resource warm water (Class "B(WW)"). Limited resource warm water (Class "B(LR)"). Lakes and wetlands (Class "B(LW)"). Drinking water supply (Class "C").	General Water Quality criteria b. Such waters shall be free from floating debris, oil, grease, scum and other floating materials attributable to wastewater discharges or agricultural practices in amounts sufficient to create a nuisance. c. Such waters shall be free from materials attributable to wastewater discharges or agricultural practices producing objectionable color, odor or other aesthetically objectionable conditions.
Kansas	Aquatic Life support use Recreation use	Nutrients. The introduction of plant nutrients into streams, lakes or wetlands from artificial sources shall be controlled to prevent the accelerated succession or replacement of aquatic biota or the production of undesirable quantities or kinds of aquatic life. The introduction of plant nutrients into surface waters designated for primary or secondary contact recreational use shall be controlled to prevent the development of objectionable concentrations of algae or algal by-products or nuisance growths of submersed, floating or emergent aquatic vegetation.
Louisiana	Narrative criteria for all waters	Nutrients. The naturally occurring range of nitrogen-phosphorous ratios shall be maintained. This range shall not apply to designated intermittent streams. To establish the appropriate range of ratios and compensate for natural seasonal fluctuations, the administrative authority will use site-specific studies to establish limits for nutrients. Nutrient concentrations that produce aquatic growth to the extent that it creates a public nuisance or interferes with designated water uses shall not be added to any surface waters.

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Maine	All Lakes 1. Class GPA waters. Class GPA shall be the sole classification of great ponds and natural ponds and lakes less than 10 acres in size. B. Class GPA waters shall be described by their trophic state based on measures of the chlorophyll <i>a</i> content, Secchi disk transparency, total phosphorus content and other appropriate criteria. Class GPA waters shall have a stable or decreasing trophic state, subject only to natural fluctuations and shall be free of culturally induced algal blooms which impair their use and enjoyment.	Trophic state - Maine Trophic State Index (TSI) Trophic state is the ability of a body of water to produce algae and other aquatic plants. The trophic state of a body of water is a function of its nutrient content and may be estimated using the Maine Trophic State Index (TSI) as follows.... In addition, a scale of 0 to 100 is established in order to measure the trophic state or degree of enrichment of lakes due to nutrient input.	TSI = 70 log (mean chlorophyll <i>a</i> + 0.7)
Massachusetts	All waterbody - Narrative criteria	Control of Eutrophication. ...there shall be no new or increased point source discharge of nutrients primarily phosphorus and nitrogen that would encourage cultural eutrophication or the growth of weeds or algae in these Lakes or ponds. Any existing point source discharge containing nutrients in concentration which encourage eutrophication or growth of weeds or algae in these lakes or ponds shall be provided with all reasonable control for non-point source.	
Michigan	All waters narrative criteria	R 323.1060 Plant nutrient Nutrients shall be limited to the extent necessary to prevent stimulation of growths of aquatic rooted, attached, suspended, and floating plants, fungi or bacteria which are or may become injurious to the designated uses of the waters of the state.	
Minnesota	Narrative criteria for all waters	Nuisance conditions prohibited. -Excessive growths of aquatic plants, or other offensive or harmful effects.	
Missouri	General criteria for all waters	Waters shall be free from substances or conditions in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.	
Montana	Eight classifications by designated use	(h) No increases of carcinogenic, bioconcentrating, toxic or harmful parameters, pesticides and organic and inorganic materials, including heavy metals, above naturally occurring concentrations, are allowed.	
Nebraska	Agricultural use	This use applies to all surface waters of the state. To be aesthetically acceptable, waters shall be free from human-induced pollution which causes: 1) noxious odors; 2) floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, or deposits; and 3) the occurrence of undesirable or nuisance aquatic life (e.g., algal blooms). Surface waters shall also be free of junk, refuse, and discarded dead animals.	

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Nevada	<p>Lake Mead - 445A.194 Requirements to maintain existing higher quality for area of Lake Mead; standards for beneficial uses for area not covered by NAC 445A. 196. (NRS 445A.425, 445A.520)</p> <p>Designated use Recreation involving contact with water, propagation of aquatic life, including, without limitation, a warm water fishery, recreation not involving contact with water and municipal or domestic supply, or both.</p>	<p>Chlorophyll <i>a</i> –$\mu\text{g liter}^{-1}$ requirement to maintain existing Higher Quality</p> <p>b. The requirements for chlorophyll <i>a</i> are:</p> <p>(1) Not more than one monthly mean in a calendar year at Station 3 may exceed $45 \mu\text{g liter}^{-1}$.</p> <p>(2) The mean for chlorophyll <i>a</i> in summer (July 1 - September 30) must not exceed $40 \mu\text{g liter}^{-1}$ at Station 3, and the mean for 4 consecutive summer years must not exceed $30 \mu\text{g liter}^{-1}$. The sample must be collected from the center of the channel and must be representative of the top 5 meters of the channel. "Station 3" means the center of the channel at which the depth is from 16 to 18 meters.</p> <p>(3) The mean for chlorophyll <i>a</i> in the growing season (April 1-September 30) must not exceed $16 \mu\text{g liter}^{-1}$ at LM4 and $9 \mu\text{g liter}^{-1}$ at LMS. LM4 is located just outside of the Las Vegas Bay launch ramp and marina, next to buoy RW "1." LM5 is located next to buoy RW "A" with the southshore landmark of Crescent Island.</p> <p>(4) The mean for chlorophyll <i>a</i> in the growing season (April 1 - September 30) must not exceed $5 \mu\text{g liter}^{-1}$ in the open water of Boulder Basin, Virgin Basin, Gregg Basin and Pierce Basin. The single value must not exceed $10 \mu\text{g liter}^{-1}$ for more than 5 percent of the samples.</p> <p>(5) Not less than 2 samples must be collected between the months of March and October. During months when only one sample is available, that value must be used in place of the monthly mean.</p>
New Hampshire	Narrative criteria related to all waters	e) There shall be no new or increased discharge(s) containing phosphorus or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds.
New Jersey	Narrative criteria for all waters	<p>2. Except as due to natural conditions, nutrients shall not be allowed in concentrations that cause objectionable algal densities, nuisance aquatic vegetation, or otherwise render the waters unsuitable for the designated uses.</p> <p>3. Activities resulting in the non-point discharge of nutrients shall implement the best management practices determined by the Department to be necessary to protect the existing or designated uses.</p>
New Mexico	Narrative criteria for all waters	E. Plant Nutrients: Plant nutrients from other than natural causes shall not be present in concentrations which will produce undesirable aquatic life or result in a dominance of nuisance species in surface waters of the State.
New York	Narrative criteria for all State waters	Waters shall contain no phosphorus and nitrogen in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usage.

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North Carolina	<p>Freshwater – Class C waters and tidal salt water</p> <p>For lakes and reservoirs and other waters subject to growths of macroscopic and microscopic vegetation not designated as trout waters</p> <p>Lakes, reservoirs and other waters subject to growths of macroscopic or microscopic vegetation designated as trout waters (not applicable to lakes and reservoirs less than 10 acres in surface area)</p>	<p>Not to exceed 40 $\mu\text{g liter}^{-1}$</p> <p>Not to exceed 15 $\mu\text{g liter}^{-1}$</p>
North Dakota	<p>1) Municipal and domestic water.</p> <p>2) Recreation Fishing and Wildlife</p> <p>3) Agricultural uses</p> <p>4) Industrial water</p>	<p>1) Free from substances attributable to municipal, industrial, or other discharges or agricultural practices that will cause the formation of putrescent or otherwise objectionable sludge deposits.</p> <p>(2) Free from floating debris, oil, scum, and other floating materials attributable to municipal, industrial, or other discharges or agricultural practices in sufficient amounts to be unsightly or deleterious.</p> <p>(3) Free from materials attributable to municipal, industrial, or other discharges or agricultural practices producing color, odor, or other conditions to such a degree as to create a nuisance or render any undesirable taste to fish flesh or, in any way, make fish inedible.</p>
Ohio	Narrative criteria for all waters	<p>3745-1-04 Criteria applicable to all waters.</p> <p>(E) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.</p>
Oklahoma	Narrative criteria for all waters	<p>To determine excess nutrient by using Carlson's Trophic State Index. Using chlorophyll <i>a</i>, a value of 62 or greater, is otherwise listed as "NLW" in Appendix A of chapter. Water are to be designated as "Nutrient-limited watershed" which means a watershed of a waterbody with a designated beneficial use which is adversely affected by excess nutrients as determined by Carlson's Trophic State Index.</p> <p>A) Narrative criterion applicable to all waters of the state. Nutrients from point source discharges or other sources shall not cause excessive growth of periphyton, phytoplankton, or aquatic macrophyte communities which impairs any existing or designated beneficial use.</p>

State	Water Body Type or Designated Use	Numeric or Narrative Chlorophyll <i>a</i> Criteria	
Oregon	Water use designation by basin.	340-041-0150 Nuisance Phytoplankton Growth The following values and implementation program shall be applied to lakes, reservoirs, estuaries and streams, except for ponds and reservoirs less than ten acres in surface area, marshes and saline lakes: (1) The following average chlorophyll <i>a</i> values shall be used to identify water bodies where phytoplankton may impair the recognized beneficial uses: (a) Natural lakes which thermally stratify: 0.01 mg liter ⁻¹ ; (b) Natural lakes which do not thermally stratify, reservoirs, rivers and estuaries: 0.015 mg liter ⁻¹ ; (c) Average chlorophyll <i>a</i> values shall be based on the following methodology (or other methods approved by the Department): A minimum of three samples collected over any three consecutive months at a minimum of one representative location (e.g., above the deepest point of a lake or reservoir or at a point mid-flow of a river) from samples integrated from the surface to a depth equal to twice the Secchi depth or the bottom (the lesser of the two depths); analytical and quality assurance methods shall be in accordance with the most recent edition of <i>Standard Methods for the examination of Water and Wastewater</i> .	
Rhode Island	Narrative criteria related for all waters	Freshwater 10 b. None in such concentration that would impair any usages specifically assigned to said Class or cause undesirable or nuisance aquatic species associated with cultural eutrophication, nor cause exceedance of the criterion of 10(a) above in a downstream lake, pond, or reservoir.	Seawater Where waters have low tidal flushing rates, applicable treatment to prevent or minimize accelerated or cultural eutrophication may be required for regulated nonpoint source activities.
South Dakota	(1) Domestic water supply waters; (2) Coldwater permanent fish life propagation waters; (3) Coldwater marginal fish life propagation waters; (4) Warmwater permanent fish life propagation waters; (5) Warmwater semipermanent fish life propagation waters; (6) Warmwater marginal fish life propagation waters; (7) Immersion recreation waters; (8) Limited contact recreation waters; (9) Fish and wildlife propagation, recreation, and stock watering waters; (10) Irrigation waters; and (11) Commerce and industry waters.	74:51:01:09. Nuisance aquatic life. Materials which produce nuisance aquatic life may not be discharged or mused to be discharged into surface waters of the state in concentrations that impair a beneficial use or create a human health problem.	

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Texas	Narrative criteria for all waters	<p>§307.4. General Criteria.</p> <p>(e) Nutrient parameters. Nutrients from permitted discharges or other controllable sources shall not cause excessive growth of aquatic vegetation which impairs an existing, attainable, or designated use. Site-specific nutrient criteria, nutrient permit limitations, and/or separate rules to control nutrients in individual watersheds will be established where appropriate after notice and opportunity for public participation and proper hearing.</p>
Utah	<p>High Quality Waters – Category 1, 2, 3</p> <p>6.1 Class 1 – Protected for use as a raw water source for domestic water systems.</p> <p>a. Class 1A – Reserved.</p> <p>b. Class 1B – Reserved.</p> <p>c. Class 1C – Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water</p> <p>6.2 Class 2 – Protected for recreational use and aesthetics.</p> <p>a. Class 2A – Protected for primary contact recreation such as swimming.</p> <p>b. Class 2B – Protected for secondary contact recreation such as boating, wading, or similar uses.</p> <p>6.3 Class 3 – Protected for use by aquatic wildlife.</p> <p>a. Class 3A – Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.</p> <p>b. Class 3B – Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.</p> <p>c. Class 3C – Protected for non-game fish and other aquatic life, including the necessary aquatic organisms in their food chain.</p> <p>d. Class 3D – Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.</p> <p>e. Class 3E – Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.</p> <p>6.4 Class 4 – Protected for agricultural uses including irrigation of crops and stock watering.</p> <p>6.5 Class 5 – The Great Salt Lake. Protected for primary and secondary contact recreation, aquatic wildlife, and mineral extraction.</p>	<p>7.2 Narrative Standards</p> <p>It shall be unlawful, and a violation of these regulations, for any person to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste; or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures.</p>

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Virginia	Narrative criteria/plan of action for all state waters.	The Board recognizes that nutrients are contributing to undesirable growths of aquatic plant life in surface waters of the Commonwealth. This standard establishes a designation of "nutrient enriched waters". Designations of surface waters of the Commonwealth as "nutrient enriched waters" are determined by the Board based upon an evaluation of the historical water quality data for one or more of the following indicators of nutrient enrichment: chlorophyll <i>a</i> concentrations, dissolved oxygen fluctuations, and concentrations of total phosphorus.

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Washington	<p>- Class AA (extraordinary) Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses. Characteristic uses: i) water supply (domestic, agricultural, industrial) ii) stock watering iii) fish and shellfish * iv) wildlife habitats v) Recreation vi) Commerce and navigation vii) Aesthetic Values **</p> <p>- Class A (excellent) Same as class AA except for fecal coliform levels are lower in the AA category in freshwater. - Class B (good) Water quality for this class shall meet or exceed the requirements for most uses. Characteristic uses: i) water supply (industrial and agricultural) (all other uses stay the same as above classes; different numeric criteria for DO and fecal coliform.)</p> <p>- Class C (fair) Water quality of this class shall meet or exceed the requirements of selected essential uses. i) water supply (industrial) (different criteria for DO and fecal coliform in this class). <u>Lake class</u> -Establishing Lake Nutrient criteria</p>	<p>Narrative or Numeric Chlorophyll <i>a</i> Standards Lakes in the Willamette, East Cascade Foothills, or Blue Mountain ecoregions do not have recommended values and need to have lake-specific studies in order to receive criteria as described in (c)(i) of this subsection. (b) The following actions are recommended if ambient monitoring of a lake shows the epilimnetic total phosphorus concentration, as shown in Table 1 of this section, is below the action value for an ecoregion: (i) Determine trophic status from existing or newly gathered data. The recommended minimum sampling to determine trophic status is calculated as the mean of four or more samples collected from the epilimnion between June through September in one or more consecutive years. Sampling must be spread throughout the season. (ii) Propose criteria at or below the upper limit of the trophic state; or (iii) Conduct lake-specific study to determine and propose to adopt appropriate criteria as described in (c) of this subsection. (c) The following actions are recommended if ambient monitoring of a lake shows total phosphorus to exceed the action value for an ecoregion shown in Table 1 of this section or where recommended ecoregional action values do not exist: (i) Conduct a lake-specific study to evaluate the characteristic uses of the lake. A lake-specific study may vary depending on the source or threat of impairment. Phytoplankton blooms, toxic phytoplankton, or excessive aquatic plants, are examples of various sources of impairment. The following are examples of quantitative measures that a study may describe: Total phosphorus, total nitrogen, chlorophyll-a, dissolved oxygen in the hypolimnion if thermally stratified, pH, hardness, or other measures of existing conditions and potential changes in any one of these parameters. (ii) Determine appropriate total phosphorus concentrations or other nutrient criteria to protect characteristic lake uses. If the existing total phosphorus concentration is protective of characteristic lake uses, then set criteria at existing total phosphorus concentration. If the existing total phosphorus concentration is not protective of the existing characteristic lake uses, then set criteria at a protective concentration. Proposals to adopt appropriate total phosphorus criteria to protect characteristic uses must be developed by considering technical information and stakeholder input as part of a public involvement process equivalent to the Administrative Procedure Act (chapter 34.05 RCW). (iii) Determine if the proposed total phosphorus criteria necessary to protect characteristic uses is achievable. If the recommended criterion is not achievable and if the characteristic use the criterion is intended to protect is not an existing use, then a higher criterion may be proposed in conformance with 40 CFR part 131.10. (d) The department will consider proposed lake-specific nutrient criteria during any water quality standards rule making that follows development of a proposal. Adoption by rule formally establishes the criteria for that lake.</p>

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Wyoming	<p>Surface water classes and uses.</p> <ol style="list-style-type: none"> 1) Class 1 – Those surface waters in which no further water quality degradation by point source discharge other than from dams will be allowed. 2) Class 2 – Those surface waters, other than those classified as Class 1, which are determined to support game fish. 3) Class 3 – Those surface waters, other than those classified as Class 1, which are determined to be presently supporting non-game fish only. 4) Class 4 – Those surface waters, other than those classified as Class 1, which are determined to not have the hydrologic or natural water quality potential to support fish and include all intermittent and ephemeral streams. Class 4 waters shall receive protection for agricultural uses and wildlife watering. <ol style="list-style-type: none"> (i) USES <ol style="list-style-type: none"> (a) Agriculture; (b) Protection and propagation of fish and wildlife; (c) Industry; (d) Human consumption; (e) Recreation; (f) Scenic value. 	<p>Section 28. Undesirable Aquatic Life.</p> <p>All Wyoming surface waters shall be free from substances and conditions or combinations thereof which are attributable to municipal, industrial or other dischargers or agricultural practices, in concentrations which produce undesirable aquatic life.</p>

Source: <http://www.epa.gov/ost/standards/wqslibrary/>